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## Second Russian International Conference on Nuclear Material Protection, Control, and Accounting

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<http://mpca.ippe.obninsk.ru>

### Initiatives for Proliferation Prevention

Preventing the proliferation of weapons of mass destruction is a central part of the U.S. national security policy. The Initiatives for Proliferation Prevention (IPP) began in mid-1994 as part of a broad effort by the U.S. Department of Energy (DOE) to reduce the risk of proliferation of these weapons, particularly nuclear weapons. The fundamental strategy of IPP is to provide meaningful, sustainable, non-weapons-related work for scientists and engineers who were formerly engaged in work concerning weapons of mass destruction in the Newly Independent States (NIS), including Russia, Belarus, Ukraine, and Kazakhstan. If the IPP engages these NIS scientists and engineers in successful nonweapons business ventures, they are less likely to become proliferation risks in difficult economic periods.

Through IPP, new business ventures are formed by marrying NIS scientists and technologies with U.S. companies. DOE national laboratories and sites work with NIS institutes to identify potential

commercial ventures using expertise at the NIS institutes. Next, U.S. industry partnerships are developed, and a project is funded. Finally, as commercialization is achieved, U.S. government funding tapers off, leaving a profitable relationship

between the NIS institute and the U.S. industrial partner. Oversight and technical expertise are provided by teams from DOE national laboratories and sites, such as the Oak Ridge Site (ORS) team, which is made up of Oak Ridge National Laboratory (ORNL) and Oak Ridge Y-12 Plant personnel.

Although under the best of situations new business starts are never easy and working with the NIS countries has had added difficulties, six IPP projects have become sustainable business successes. Two of these sustainable

businesses have come from projects led by the ORS team (highlighted below).

#### Development and Improvement of New Methods for Recycling Co-Mingled Metals

The Association of Centers for Engineering and Automation in St. Petersburg, Russia, RUSTEC, Inc., of Camden, New Jersey, and an engineer from the Y-12 Plant partnered to establish a much-improved process for recycling tungsten carbide components. The new process provides significantly more efficient particle size reduction, longer crusher component life, and low process-contaminant levels. All of these factors contribute to a very economical recycling process with little or no environmental impact. The technology is of Russian design, and the Russians supply all replacement parts.

#### Commercialization of Gas Chromatograph

The Center of Instrument Engineering for Geophysics and Ecology



in Novosibirsk, Russia, Mine Safety Appliances of Pittsburgh, Pennsylvania, and scientists from ORNL partnered to improve gas chromatograph technology developed in Russia. Technology development was handled by the Russian partner; field testing and evaluation were completed by ORNL; and fabrication, packaging, and support were provided by Mine Safety Appliances. The resulting

product is a portable gas chromatograph with faster and more accurate response times in field tests. The manufacturing base is located in Russia, and Russia provides the gas chromatographs and replacement columns for sale in the United States.

**Current ORS projects include:**

- Biological Control of Honey Bee Mites
- Biological Agents for the Control of Cyanobacteria (Blue-Green Algae)

- Position Sensitive Radioactivity for Chromatographic Applications
- Nondestructive Evaluation of Load-Bearing Structural Ceramics
- Nickel Metal Hydride Battery Technology
- Chemical Bank of Compounds from the Defense Conversion Program
- Technology Development and Production of Fungicides

## Material Consolidation and Conversion

The Material Consolidation and Conversion (MCC) project supports the consolidation and conversion of highly enriched uranium (HEU) to low-enriched uranium (LEU). This activity differs from other, similar U.S. projects in that it is not focused on the conversion of material from Russian defense programs. Under the U.S. Department of Energy Material Protection, Control, and Accounting (MPC&A) program, MCC focuses on materials, at numerous Russian facilities, that could be of concern in terms of proliferation. Through cooperation with approved facilities, MCC intends to reduce the threat and minimize the costs of upgrading MPC&A systems. The MCC project has supported HEU conversion for the past year at one site and has added a second site for down blending. Several hundred kilograms of HEU have already been converted to non-weapons-usable LEU. Relocation and conversion of HEU could be made much more cost-effective by eliminating upgrades to certain buildings or even to entire facilities.

## Director's Note

*There are many faces to nonproliferation activities. Highlighted in this issue is the Initiatives for Proliferation Prevention (IPP) program. The IPP program is focused on providing meaningful, sustainable, non-weapons-related work for scientists and engineers who were formerly engaged in work concerning weapons of mass destruction. Also noted in this issue is the Material Consolidation and Conversion (MCC) project of the Material Protection, Control, and Accounting (MPC&A) program. The MCC project is focused on consolidating weapons-usable HEU from several sites into fewer, more easily safeguarded sites and facilities as well as on blending down this HEU into non-weapons-usable low-enriched uranium. The blend-down work is directed toward safeguarding materials and facilities whereas the consolidation work is directed toward safeguarding people and their knowledge. Both approaches are extremely important and play critical roles in nonproliferation. In my opinion nonproliferation is primarily a people problem with a people solution. That is, individuals, both at the facility and governmental level, must act collectively and coherently to ensure a safer, more sane future.*

—Larry Satkowiak



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